UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,162	12/02/2003	Simon Robert Walmsley	PEA02US	6708

24011 7590 07/26/2010
SILVERBROOK RESEARCH PTY LTD
393 DARLING STREET
BALMAIN, 2041
AUSTRALIA

EXAMINER	
UHLENHAKE, JASON S	

ART UNIT	PAPER NUMBER
2853	

NOTIFICATION DATE	DELIVERY MODE
07/26/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

pair@silverbrookresearch.com
patentdept@silverbrookresearch.com
uscorro@silverbrookresearch.com

Office Action Summary	Application No.	Applicant(s)	
	10/727,162	WALMSLEY ET AL.	
	Examiner	Art Unit	
	JASON S. UHLENHAKE	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 May 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11 and 16-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 16-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) in view of Tschida (U.S. Pub. 2003/0214554)

Madeley discloses

- ***regarding claim 1,*** a print head comprising rows of printing nozzles formed by adjacent printing nozzle rows adjacently disposed print head modules which each have a different printing width (different nozzle count), the printing nozzle rows of the print head being configured so that there is at least one row for printing each ink color of a plurality of ink colors (Column 7, Lines 32-43; Column 9, Lines 42-57; Column 13, Lines 2-14). Madeley discloses that nozzle rows formed by modules can be arranged in any fashion; therefore to arrange a print head comprising rows of printing nozzles formed by adjacent printing nozzle rows and being configured so that there is at least one row for printing each ink color of a plurality of ink colors (Column 9, Lines 42-57), for the purpose of allowing different colors, different combinations of colors, different ink drop sizes, and/or different resolutions to be printed using fewer total number of individual print heads

- ***regarding claim 11***, print head module configured to print a plurality of independent inks, each row is configured to print in one of the inks, and configured to supply each of the inks to at least one row (Column 6, Lines 48-54; Column 7, Lines 32-43)

Madeley does not disclose expressly:

- ***regarding claim 1,*** a printer controller for supplying dot data to a print head in a predetermined order, the print head comprising adjacently disposed print head modules, the printer controller being configured to order and time the supply of the dot data to the print head modules such the difference in any relative skew within and between the rows of printing nozzles at the transition between the adjacently disposed print head modules are at least partially compensated for by printing one dot from one printing nozzle in each row at the same physical location on media and adjusting the dot data to align each of the dots

Tschida discloses:

- ***regarding claim 1,*** a printer controller for supplying dot data to a print head in a predetermined order, the print head comprising adjacently disposed print head modules, the printer controller being configured to order and time the supply of the dot data to the print head modules such the difference in any relative skew within and between the rows of printing nozzles at the transition between the adjacently disposed print head modules are at least partially compensated for (Paragraph 0028; 0146, 0159) by printing one dot from one printing nozzle in each row at the same physical location on media (the location can be considered the entire print media) and adjusting the dot

data to align each of the dots (Paragraphs 0142, 146, 0151-0153). The misalignments will be compensated for by the device driver software so print dots will be aligned properly and not substantially misplaced.

The print head modules of Tschida incorporate nozzle rows of different colors (Paragraphs 0046, 0052) wherein any "offset of the nozzles that print different colors or offsets between print head arrays" is accounted for by timing delays generated by the device driver software (Paragraph 0159). Therefore relative skew (offset) within and between the rows of printing nozzles are at least partially compensated for.

Tschida discloses that any accumulation of error can be compensated by driver software, which includes different printing widths and skew between nozzle rows, therefore a controller supplies data in a predetermined order to compensate for errors, for the purpose of providing high-quality and high-resolution color images

At the time the invention was made it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Tschida into the device of Madeley, for the purpose of providing a low-cost printing apparatus and employing a stationary print head array that rapidly provides high quality, high resolution color images

Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) as modified by Tschida (U.S. Pub. 2003/0214554) as applied to claim 1 above, and further in view of Askren (U.S. Pat. 6,350,004).

Madeley as modified by Tschida discloses all of the claimed limitations except for the following:

- ***regarding claim 4***, wherein the printer controller is configured to compensate for the skew by introducing a relative delay into the dot data

- ***regarding claim 5***, wherein the printhead is configured to print the dots at a predetermined spacing across its width, and wherein the delay introduced by the printer controller equated to an integral multiple of the spacing

Askren discloses:

- ***regarding claim 4***, wherein the printer controller is configured to compensate for the skew by introducing a relative delay into the dot data (Column 2, Lines 50 - 57), for the purpose of improving the quality of printing.

- ***regarding claim 5***, wherein the printhead is configured to print the dots at a predetermined spacing across its width, and wherein the delay introduced by the printer controller equated to an integral multiple of the spacing (Column 2, Lines 44 – 60), for the purpose of improving the quality of printing.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Askren into the device of Madeley as modified by Tschida, for the purpose of improving the quality of printing and increasing the printing speed.

Claims 2, 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) as modified by Tschida (U.S. Pub. 2003/0214554) as applied to claim 1 above, and further in view of Dings et al (U.S. Pub. 2003/0218645)

Madeley as modified by Tschida discloses all of the claimed limitations except for the following:

- ***regarding claim 2***, the printer controller is configured to at least partially compensate for the relative skew between adjacent rows.

- ***regarding claim 16***, configured to compensate at least partially for a plurality of potential relative skews.

Dings et al discloses the following:

- ***regarding claims 2, 16***, a printer controller that is configured to compensate at least partially for plurality of relative skews (Paragraph 0013), for the purpose of accurately delivering liquid and improving the quality of printing.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Madeley as modified by Tschida, for the purpose of accurately delivering liquid and improving the quality of printing.

Claims 3, 7, are rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) as modified by Tschida (U.S. Pub. 2003/0214554) as applied to claim 1 above, and further in view of Hackleman et al (U.S. Pat. 5,719,602).

Madeley as modified by Tschida discloses all of the claimed limitations except for the following:

- ***regarding claim 3,*** wherein the relative skew between each of the plurality of the sets of the adjacent rows is the same

- ***regarding claim 7,*** wherein at least one print head module includes adjacent rows, configured to print the same ink and the dot data is shifted serially through the first of the rows then through the second of the rows

Hackleman et al discloses:

- ***regarding claim 3,*** wherein the relative skew between each of the plurality of the sets of the adjacent rows is the same (Column 4, lines 17 – 31). The purpose would have been to provide a system for compensating for skew of a print head nozzle and improving the quality of printing.

- ***regarding claim 7,*** wherein at least one print head module includes adjacent rows, configured to print the same ink and the dot data is shifted serially through the first of the rows then through the second of the rows (Column 5, lines 59-67). The purpose would have been to provide a system for compensating for skew of a print head nozzle and improving the quality of printing.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Hackleman et al into the device of Madeley as modified by Tschida, for the purpose of providing a system for compensating for a skew of a print head nozzle and improving the quality of printing.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) as modified by Tschida (U.S. Pub. 2003/0214554) and Hackleman et al (U.S. Pat. 5,719,602) and further in view of Kamoshida et al (U.S. Pub. 2002/0075339).

Madeley as modified by Tschida and Hackleman et al discloses all of the claimed limitations except for the following:

- ***regarding claim 8***, data is shifted serially through the first rows in a first direction then looped back through the second of the rows in a second direction opposite the first.

Kamoshida et al discloses the following:

- ***regarding claim 8***, data is shifted serially (Paragraphs 0026, 0086) in a first direction then looped back through in a second direction opposite of the first (Paragraphs 0005, 0011). The feeding of the paper in the opposite direction for data to be scanned as taught by Kamoshida et al is the same concept as looping back through a second pair of nozzle rows in a opposite direction until all data has been supplied.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Kamoshida et al into the device of Madeley as modified by Tschida and Hackleman et al, for the purpose of improving the efficiency of the printing mechanism and thus improving the quality of printing.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) as modified by Tschida (U.S. Pub. 2003/0214554) and Hackleman et al (U.S. Pat. 5,719,602) and further in view of Silverbrook (U.S. Pat. 5,796,416)

Madeley as modified by Tschida and Hackleman et al discloses all of the claimed limitations except for the following:

- ***regarding claim 9***, wherein the first and second rows are configured to print odd and even dots respectively to supply the one or more first rows with odd dot data and the one or more second rows with even dot data.

Silverbrook discloses the following:

- ***regarding claim 9***, rows configured to print odd and even dots respectively to supply the one or more first rows with odd dot data and the one or more second rows with even dot data (Figure 8; Column 25, Lines 15-28)

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Silverbrook into the device of Madeley as modified by Tschida and Hackleman et al, for the purpose of maintaining wafer strength (Abstract; Column 4, Lines 37-49)

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) as modified by Tschida (U.S. Pub. 2003/0214554) and Hackleman et al (U.S. Pat. 5,719,602) and further in view of Dings et al (U.S. Pub. 2003/0218645)

Madeley as modified by Tschida and Hackleman et al discloses all of the claimed limitations except for the following:

- ***regarding claim 10***, relative skew between the first and second rows of each pair of rows in a direction normal to printing at least be partially compensated for

Dings et al discloses the following:

- ***regarding claim 10***, relative skew between the first and second rows of each pair of rows in a direction normal to printing at least be partially compensated for (Paragraph 0013).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Dings et al into the device of Madeley as modified by Tschida and Hackleman et al, for the purpose of accurately delivering liquid and improving the quality of printing.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) as modified by Tschida (U.S. Pub. 2003/0214554) as applied to claim 1 above, and further in view of King et al (U.S. Pat. 6,604,808).

Madeley as modified by Tschida discloses all of the claimed limitations except for the following:

- ***regarding claim 17***, configured to compensate at least partly for a fixed amount of the skew.

King et al discloses the following:

- ***regarding claim 17***, to compensate at least partly for a fixed amount of the skew (Column 5, lines 11-19).

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of King into the device of Madeley as modified by Tschida, for the purpose of correcting known skew errors improving the quality of the printing.

Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madeley (U.S. Pat. 6,637,860) as modified by Tschida (U.S. Pub. 2003/0214554) and Askren (U.S. Pat. 6,350,004) as applied to claim 1 above, and further in view of Morita et al (U.S. Pat. 5,774,145).

Madeley as modified by Tschida and Askren discloses all of the claimed limitations except for the following:

- ***regarding claim 6***, wherein nozzles of at least one of the rows of one print head modules are positioned outside the printable region due to skew between adjacent rows of the nozzles, and nozzles outside the printable region do not print
- ***regarding claim 18***, wherein nozzles of the print head are disposed in a printable region of the print head, and at least one logical nozzle located outside the printable zone that can accept data but is not capable of printing.

Morita et al discloses the following:

- ***regarding claims 6***, wherein nozzles of at least one of the rows of one print head modules are positioned outside the printable region due to skew between adjacent rows of the nozzles (Column 3 lines 50-63), for the purpose of ensuring that no color mixture occurs and the operation is stable.
- ***regarding claim 18***, wherein nozzles of the print head are disposed in a printable region of the print head, and at least one logical nozzle that is located outside of the printable zone and can accept data but is not capable of printing (Column 2 Lines 25-67, Column 3). The introduction of a relative delay into the dot data supplied, such

that dot data is supplied to the correct nozzles is seen as a purpose and not a function of the device.

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to incorporate the teaching of Morita into the device of Madeley as modified by Tschida and Askren, for the purpose of ensuring that no color mixture occurs and the operation is stable.

Response to Arguments

Applicant's arguments with respect to claims 1-11, 16-18 have been considered but are moot in view of the new ground(s) of rejection. Tschida (U.S. Pub. 2003/0214554) discloses the printer controller being configured to order and time the supply of the dot data to the print head modules such the difference in any relative skew within and between the rows of printing nozzles at the transition between the adjacently disposed print head modules are at least partially compensated for (Paragraph 0028; 0146, 0159) by printing one dot from one printing nozzle in each row at the same physical location on media (the location can be considered the entire print media) and adjusting the dot data to align each of the dots (Paragraphs 0142, 146, 0151-0153). The misalignments will be compensated for by the device driver software so print dots will be aligned properly and not substantially misplaced.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Uhlenhake whose telephone number is (571) 272-5916. The examiner can normally be reached on Monday - Friday 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

/JASON S UHLENHAKE/
Examiner, Art Unit 2853
July 8, 2010

/Julian D. Huffman/
Primary Examiner, Art Unit 2853